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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/803,802	03/12/2001	Shoupu Chen	82121DMW	8598

7590 10/17/2006  
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EXAMINER

EDWARDS, PATRICK L

ART UNIT PAPER NUMBER

2624

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/803,802	Applicant(s) CHEN ET AL.	
	Examiner Patrick L. Edwards	Art Unit 2624	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08-03-2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2,4,6-13,15-17,19-23 and 25-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-4,6-13,15,17,19-23 and 25-27 is/are allowed.
- 6) ☒ Claim(s) 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                            |                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                           | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

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### DETAILED ACTION

1. The response received on 08-03-2006 has been placed in the file and was considered by the examiner. An action on the merits follows.

#### *Response to Arguments*

2. The arguments filed on 08-03-2006 have been fully considered. A response to these arguments is provided below.

### Prior Art Rejections

#### Summary of Argument:

Regarding claim 16—which is the only remaining claim that has not been allowed—applicant amends this claim by adding the limitation that “capture positions [differ] by camera rotation about a Y-axis (vertical axis), wherein there is an overlap region.”

#### Examiner's Response:

The examiner is unpersuaded that this new amendment overcomes the ‘renowned institution’ reference. This amendment merely states that the capturing camera rotates about a vertical axis. But we already knew that the camera rotates about a vertical axis. Figure 4 shows us pictures where a camera has been rotated about a vertical axis.

Regarding applicant's arguments about the “automation” limitation. These arguments are unpersuasive for the reasons that have previously been set forth on the record. Applicant's further argumentation is unpersuasive.

#### *Allowable Subject Matter*

3. Claims 2, 3, 4, 6-13, 15, 17, 19-23, and 25-27 are allowed.

#### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over 'renowned institution'. The arguments as to the relevance of 'renowned institution' as applied above are incorporated herein.

'Renowned institution' further discloses acquiring a plurality of adjacent images of the scene, said adjacent images each having a known capture position defining a known spatial relation between said adjacent images, wherein there is an overlap region between the adjacent images and at least some of the adjacent images are range images, said range images each having relative range values, said range images differing by said known spatial relation and an unknown relative range difference (see Figure 4a-b in conjunction with the reference's description of determining camera pose: The reference describes two embodiments. One in which a pose estimate is unavailable at the time of image capture, and another where a pose estimate is available at the time of image capture (this is discussed on the left side of the 2<sup>nd</sup> page of the reference). This second embodiment meets the claimed limitation because we have a known spatial relation (i.e. the approximate pose estimate), but our range difference (i.e. the range distance) is unknown until the system comes up with an estimate.).

'Renowned institution' further discloses deriving a 3D panorama from said range images and said optimized constant offset. This was discussed above with respect to the preamble of claim 1. As was stated, the 'entire scene' is analogous to the claimed 'panorama'. These two terms are definitionally equivalent (see websters dictionary).

'Renowned institution' further discloses providing offset data for the range images (pg. 1 col. 2., final paragraph: The reference describes determining 'distances between views'. This is analogous to providing offset data as recited in the claim.) in order to recover corrected relative scene spatial information (pg. 1 col. 2, lines 4-7: The reference describes registering separate viewpoints and then integrating those viewpoints. This is analogous to recovering the relative scene spatial information. Furthermore, the second paragraph of the right column of page 2 describes a smoothing preprocessing operation is performed before all of the other processes. Smoothing qualifies as a type of 'correction'; therefore the reference also meets the claimed limitation of 'corrected relative scene spatial information.').

The 'renowned institution' further discloses applying this offset data to correct for ambiguities in the relative ranges of the range images, thereby providing corrected range images. As was stated in the paragraph above, the 'renowned institution' discloses determining range differences between adjacent range images. These offsets are analogous to the ambiguities recited in the claim (also see pg. 2 – col. 1 – final paragraph: this passage makes explicit mention of the ambiguities associated with the range images). The passage cited in the above paragraph shows how the range differences are used in the determination of a translation which aligns, registers, or fits these images together, thereby providing corrected range images.

'Renowned institution' inherently discloses a computer program product because a computer performing a process is disclosed at pg. 7.

Regarding the additional limitation of "automatically providing offset data": 'renowned institution' does not anticipate this limitation because it requires user input. However, 'renowned institution' does expressly state that "Our ultimate goal is a totally automated system, and to this end we have designed the system to rely on user input only for the scan-to-scan plane correspondences, which we hope to automate in future implementations. It would

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have been obvious to one reasonably skilled in the art at the time of the invention to follow the suggestion of the 'renowned institution' and totally automate the existing system. Such a modification would have allowed for a system that could be executed without the added cost of user interaction

*Conclusion*

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick L Edwards whose telephone number is (571) 272-7390. The examiner can normally be reached on 8:30am - 5:00pm M-F.

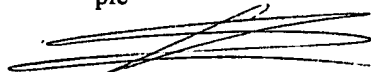
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick L Edwards

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